

TABLE 5

SUMMARY OF PREHISTORIC LITHIC ASSEMBLAGE
SITE 7NC-J-50

ARTIFACT TYPE	RAW MATERIAL						TOTAL
	Chert	Jasper	Quartz	Quartzite	Chalcedony	Not Assgn.	
Unifaces							
Retouched Flakes	1	1	.	.	.	.	2
Cores							
Bipolar Cores	.	1	.	.	.	.	1
Debitage							
Flake Fragments	3	.	3	.	.	.	6
Flake Shatter	.	1	.	1	.	.	2
Block Shatter	.	1	9	2	.	.	12
Decortication Flakes	1	.	.	1	.	.	2
Early Reduction Flakes	5	3	1	.	1	.	10
Bipolar Reduction Flakes	.	1	.	.	.	.	1
Biface Reduction Flakes	.	1	.	.	.	.	1
Hammerstones	.	.	.	1	.	.	1
Fire-Cracked Rock	.	.	.	.	.	6	6
TOTALS	10	9	13	5	1	6	44

D. OSBORNE WETLAND REPLACEMENT AREA

1. Site Setting

The Osborne Wetland Replacement Area is located west of U.S. Route 13 and south of Black Diamond Road, adjacent to the SR 1 corridor in southern New Castle County about 3 kilometers (2 miles) north of Smyrna. The wetland area is quite large, approximately 65 hectares (160 acres) in extent, of which 8.1 hectares (20 acres) were wetlands, 8.5 hectares (21 acres) woods, and the remainder active agricultural fields. The northern portion of the wetland area was divided from the remainder by a stream that flows northeast toward Sawmill Branch. This stream had been dammed and dredged to create a large pond, and above the pond it had been channelized into a deep drainage ditch (Plate 8). Before the excavation of the pond and ditch, the stream was probably surrounded by substantial wetlands, now greatly reduced in extent. Other wetlands were present to the south, including a small bay/basin pond that is now a meadow, as well as low areas in the woods which are overgrown with buttonwood and other wetland shrubs. Between these wetlands were numerous low ridges, rising up to 6 meters (20 feet) above the wetlands.



PLATE 8: Aerial View of the Osborne Wetland

2. *Field Methods*

In order to facilitate recordkeeping, the Osborne wetland was divided into 18 survey areas (Figure 53). Survey Areas 1 through 17 corresponded to one of the ridges in the open field, while Survey Area 18 included all of the wooded area. At the time of the survey the agricultural fields in the wetland area were planted in three different crops. North and west of the stream the fields has just been plowed and planted with soybeans when the survey began. After a heavy rain, visibility in these fields was nearly 100 percent, and they were surveyed by surface inspection on transects approximately 2 meters apart. East of the former bay/basin pond, in the southeastern corner of the wetland area, the fields were planted in wheat, and surface visibility was near zero. Ridges in the wheat field were surveyed by shovel testing at 20-meter intervals. The majority of the project area was planted in corn. At the commencement of testing the corn was less than one foot tall, and surface visibility was greater than 80 percent. However, the corn was growing very rapidly, and by the conclusion of the survey two weeks later some of the corn was more than two feet tall. Also, continuing rains had begun to silt up the furrows between the corn rows, possibly obscuring some artifacts. The interval between surface inspection transects was therefore decreased to one meter, with archaeologists walking between every other row of corn. The discovery of sites in Areas 6, 7, 13 and 15, all planted in corn, showed that surface inspection was an effective technique under these circumstances. However, to insure reliable coverage, blocks of six to nine shovel test pits were excavated in Survey Areas 9, 10, 12, 14, and 17. No artifacts were recovered from these shovel tests, confirming the results of the surface inspection. The wooded area (Survey Area 18) was surveyed by shovel testing at 20-meter intervals (Plate 9).

Sites were designated at locations in which more than three prehistoric artifacts were recovered in a survey area. On each site, at least one transect of shovel test pits was excavated at 20-meter intervals to investigate the stratigraphy across the site. In general, the subplowzone soils throughout the Osborne Wetland Replacement Area were sand and sandy loam, indicating the potential for soil mobility and the possibility of buried archaeological sites.

3. *Survey Area 1*

Survey Area 1, which measured about 9,000 square meters (2.1 acres), was located on a low ridge north of the stream, adjacent to Black Diamond Road (Figure 54). When the fieldwork was carried out, the area had just been plowed and rained on. The surface visibility was excellent, and the survey was carried out by surface inspection. One site was discovered in this survey area, a small prehistoric lithic scatter designated Site 7NC-J-210 (Osborne Wetland No. 1 Site).

Site 7NC-J-210, the Osborne Wetland No. 1 Site

Site 7NC-J-210 (the Osborne Wetland No. 1 Site) was a prehistoric lithic scatter located in the center of Survey Area 1. Five artifacts—four flakes and a chert biface—were recovered from the surface of this ridge in an area measuring approximately 85 meters north-south by 30 meters east-west (280x100 feet). Two transects of six shovel test pits, for a total of 12 shovel tests, were



PLATE 9: Shovel Testing in the Wooded Portion of the Osborne Wetland

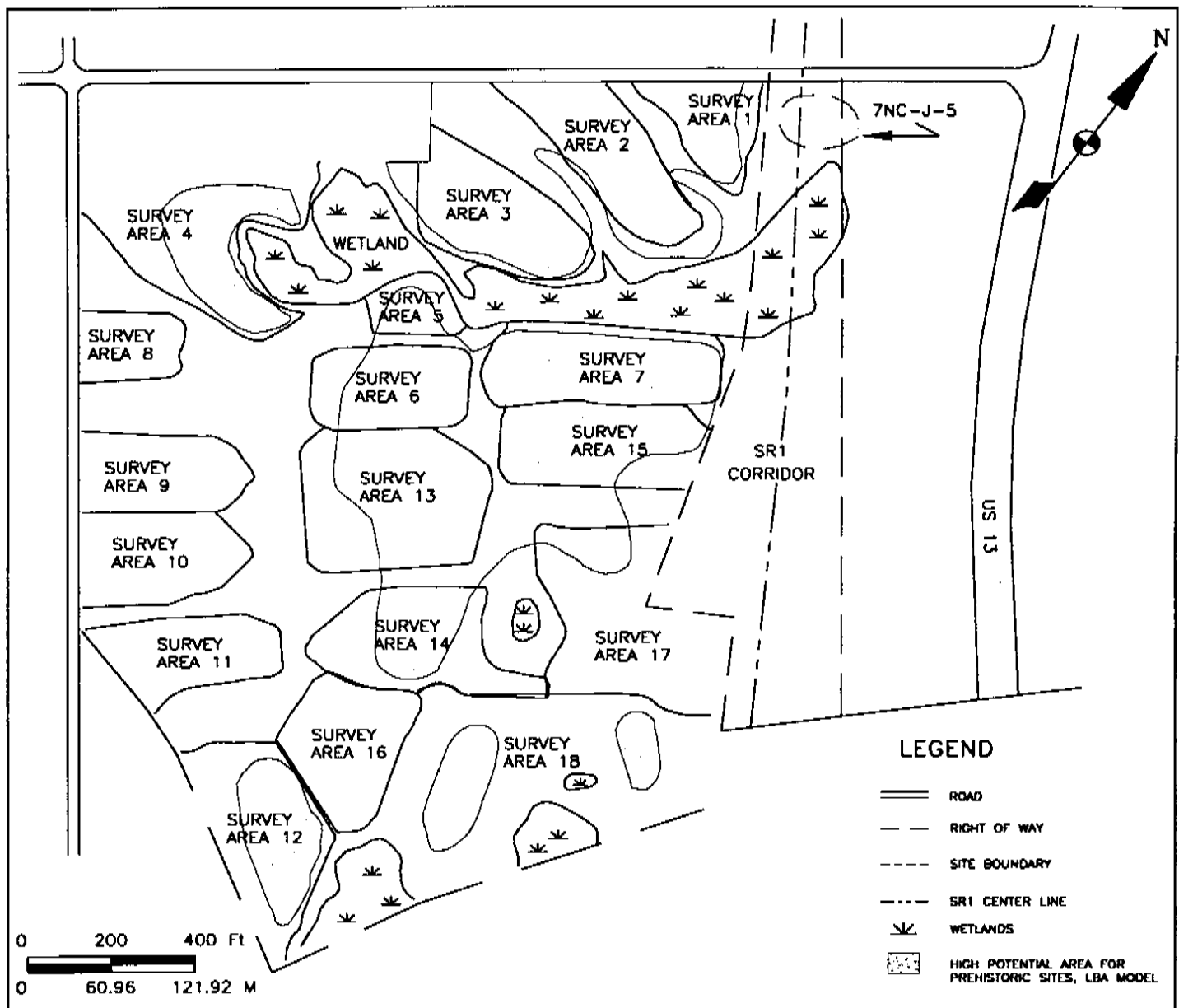


FIGURE 53: The Osborne Wetland Replacement Area, Showing Survey Areas and Previously Identified Sites

then excavated across the site at 20-meter intervals. Flakes were recovered from two of these shovel tests. Six close-interval shovel test pits were then excavated around these positive shovel tests, and flakes were recovered from two more. All of the artifacts were recovered from the plowzone.

Because of the small quantity of material recovered, all from the plowzone, Site 7NC-J-210 did not appear to be potentially eligible for listing in the NRHP in and of itself, because it carried

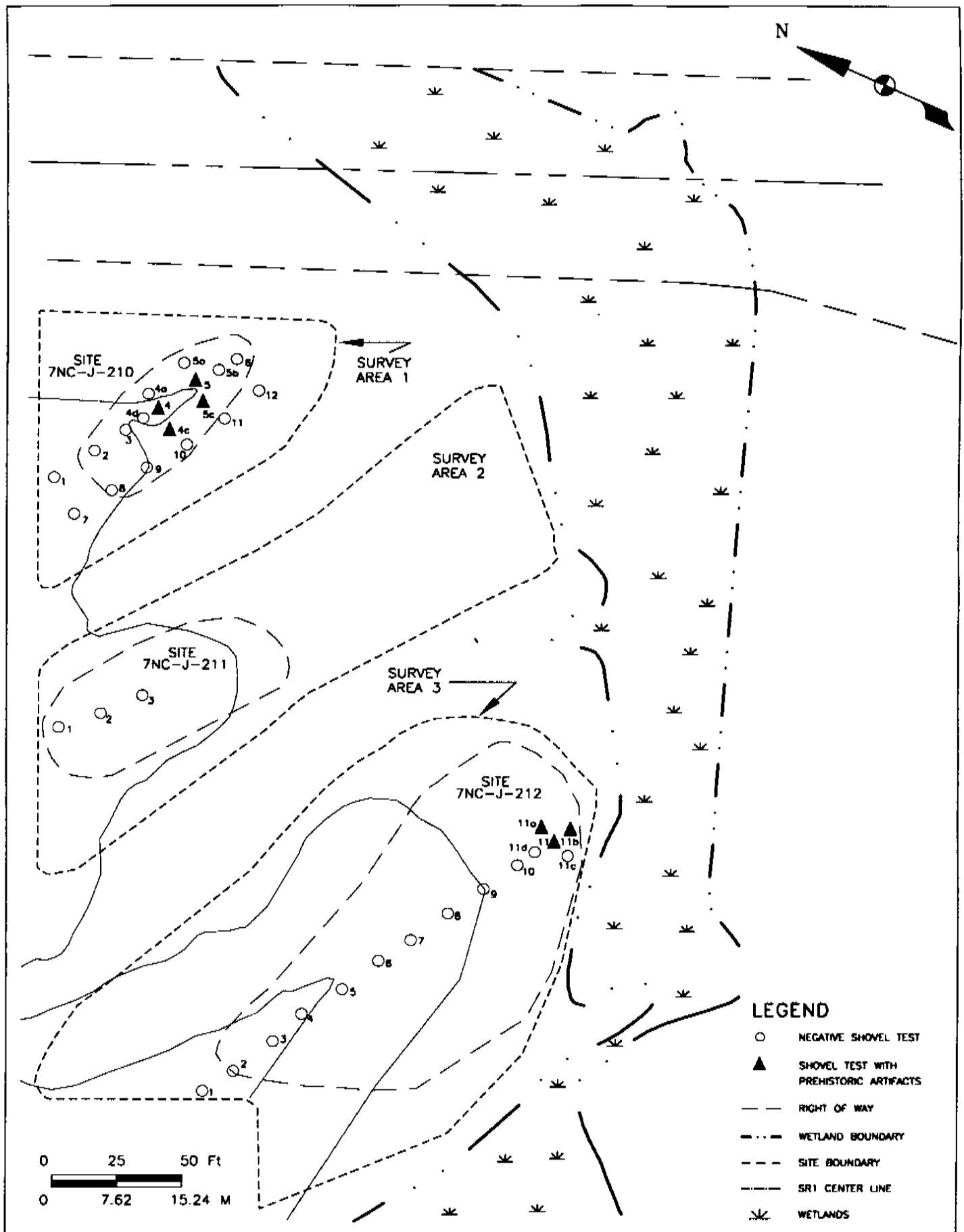


FIGURE 54: Osborne Wetland, Survey Areas 1, 2, and 3, and Sites 7NC-J-210, 211, and 212, Plan of Testing

little information potential by itself. However, the overall pattern of sites in the Osborne Wetland Replacement Area was quite interesting, and had the potential to provide insight into aspects of local and regional settlement patterns in prehistoric times. Therefore, in consultation with DelDOT and DESHPO staff, a strategy for Phase II investigations was generated that called for the testing of a sample of the smaller sites in the Osborne Wetland Replacement Area. Because the four adjacent positive shovel tests on Site 7NC-J-210 suggest a defined area of high artifact density, that site was selected for testing as part of this sample. Results of this testing are reported in Chapter VI.

4. Survey Area 2

Survey Area 2 was located on two connected hills north of the stream, one adjacent to the wetlands, and the second, which was higher, adjacent to Black Diamond Road (see Figure 54). The survey area measured about 2.6 hectares (6.3 acres). A small drainage, running south toward the stream, separated these hills from the ridge to the west. At the time the fieldwork was carried out, the area had just been plowed and rained on. The surface visibility was excellent, and the survey was carried out by surface inspection. One site was discovered in the survey area, a prehistoric lithic scatter designated Site 7NC-J-211 (the Osborne Wetland No. 2 Site).

Site 7NC-J-211, the Osborne Wetland No. 2 Site

Site 7NC-J-211 (the Osborne Wetland No. 2 Site) was a prehistoric lithic scatter located on the northern of the two hills that made up Survey Area 2, 100 meters (325 feet) north of the wetlands. Eleven artifacts, consisting of 10 flakes and a contracting-stemmed chert point, were recovered from the surface in an area measuring approximately 110 meters north-south and 50 meters east-west (350x160 feet). No artifacts were recovered from the low hill to the south, adjacent to the wetland. Three shovel test pits, all negative, were excavated on the highest ground.

Only a very small number of artifacts were recovered during surface survey, approximately two per 1,000 square meters. No artifacts were recovered from the shovel tests. Therefore, it was determined that Site 7NC-J-211 carried little information potential. The site was not considered to be potentially eligible for listing in the NRHP, and no further work was recommended.

5. Survey Area 3

Survey Area 3 was located on one of the larger ridges in the wetland area, extending northwest from the stream to a house on Black Diamond Road (see Figure 54). The project area comprised about 4.5 hectares (11 acres). Surface visibility was excellent, and the survey was carried out by surface inspection. One site was discovered in the survey area, an early Woodland I/Late Archaic lithic scatter designated Site 7NC-J-212 (the Osborne Wetland No. 3 Site).

Site 7NC-J-212, the Osborne Wetland No. 3 Site

A total of 160 prehistoric artifacts were recovered from the surface survey of Site 7NC-J-212 (the Osborne Wetland No. 3 Site). Most of the artifacts were lithic debitage and cores, but two stemmed projectile points, one resembling the Bare Island type (Ritchie 1971), and two flake tools were also recovered (Table 6). The site measures approximately 150 meters north-south by 60 meters east-west (500x200 feet), and surface artifact density was approximately 10 per 1,000 square meters. A single transect of 11 shovel test pits was excavated across the site at 20-meter intervals. Typical soil profiles consisted of a moderately deep plowzone of sandy loam over a subsoil of almost pure sand. Shovel Test Pit 3-11, adjacent to the stream, yielded two flakes from a subplowzone context, and two of the close-interval shovel tests excavated around Shovel Test Pit 3-11 also yielded flakes, one from below the plowzone. Based on the number and variety of artifacts recovered, the site appeared to be a base camp used by prehistoric peoples utilizing the nearby wetlands.

A relatively large number of artifacts were found on the site, and the presence of diagnostic artifacts made it possible to date at least one component of the occupation to the Woodland I period. Evidence of a significant lithic industry based on reduction of local cobbles was recovered. The recovery of artifacts from subplowzone contexts suggested the possibility of an intact buried prehistoric component at the site. Therefore, Site 7NC-J-212 was considered to be potentially eligible for listing in the NRHP, and Phase II significance evaluation was recommended. After consultation with DelDOT and DESHPO staff, Phase II testing was carried out. The results are presented in Chapter VI.

6. Survey Area 4

Survey Area 4, which comprised about 7.7 hectares (19 acres), was located on a low ridge west of the stream, parallel to Massey's Church Road (Figure 55). At the time fieldwork was conducted, the area had just been plowed and rained on. As a result, surface visibility was excellent, and the survey was carried out by surface inspection. One site was discovered in the survey area, a low-density lithic scatter which was designated Site 7NC-J-213 (the Osborne Wetland No. 4 Site).

Site 7NC-J-213, the Osborne Wetland No. 4 Site

Site 7NC-J-213 (the Osborne Wetland No. 4 Site) was a prehistoric lithic scatter occupying a low ridge that runs the length of Survey Area 4. A total of 26 lithic flakes were recovered from the surface in an area measuring approximately 180x60 meters (600x200 feet), yielding a surface artifact density of 2.4 per 1,000 square meters. A single transect of 12 shovel test pits was excavated along the ridge at 20-meter intervals, and single flakes were recovered from three of these shovel tests. These artifacts were all from the plowzone, and no additional artifacts were recovered from the 10 close-interval shovel test pits excavated around them. The site appeared to represent a procurement station that was used only occasionally.

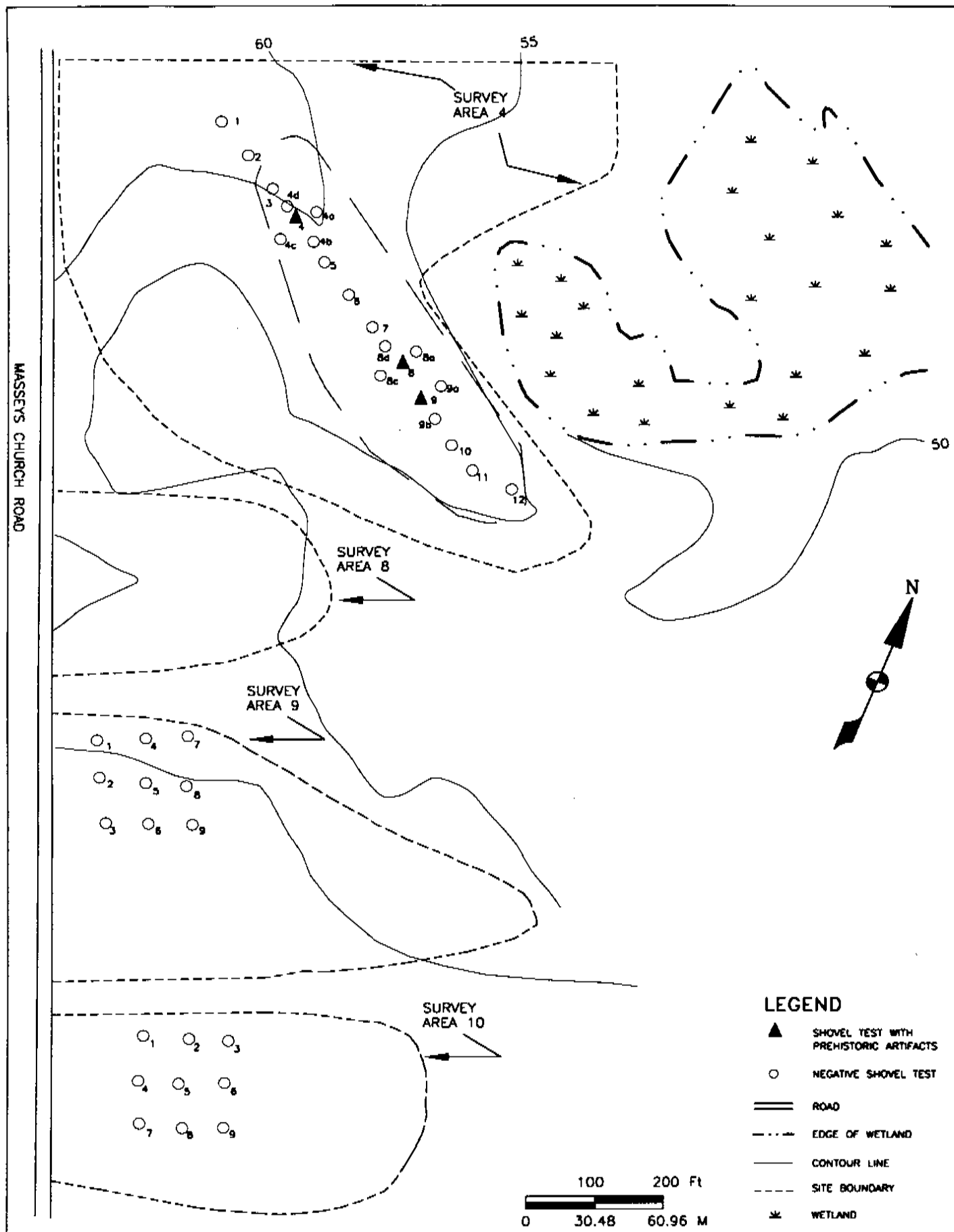


FIGURE 55: Osborne Wetland, Survey Areas 4, 8, 9, and 10, and Site 7NC-J-213, Plan of Testing

TABLE 6

SUMMARY OF PREHISTORIC LITHIC ASSEMBLAGE
SITE 7NC-J-212

	RAW MATERIAL					
ARTIFACT TYPE	Quartz	Chert	Jasper	Rhyolite	Sandstone	TOTAL
Bifaces						
Projectile Points	1	.	1	.	.	2
Early-Stage Bifaces	2	.	.	.	.	2
Late-Stage Bifaces	.	1	.	.	.	1
Ind. Biface Fragments	1	.	.	.	.	1
Unifaces						
Retouched Flakes	1	.	1	.	.	2
Cores						
Freehand Cores	8	1	1	.	.	10
Bipolar Cores	1	.	.	.	.	1
Tested Cobbles	.	.	1	.	.	1
Debitage						
Flake Fragments	8	15	4	.	.	27
Block Shatter	23	.	1	.	.	24
Decortication Flakes	8	4	3	.	.	15
Early Reduction Flakes	49	15	3	1	1	69
Biface Reduction Flakes	1	2	2	.	.	5
TOTALS	103	38	17	1	1	160

Site 7NC-J-213 was characterized by an extremely low artifact density and, therefore, was not considered to be potentially eligible for listing in the NRHP. No further work was recommended for Site 7NC-J-213.

7. Survey Area 5

Survey Area 5, the smallest survey area designated in the Osborne Wetland Replacement Area, comprising only 2,500 square meters (0.6 acres), was located on a small hill south of the stream, adjacent to wetlands on the north and east (Figure 56). At the time fieldwork was conducted, the area had just been plowed and rained on. As a result, surface visibility was excellent, and the survey was carried out by surface inspection. One site was discovered in the survey area, a prehistoric lithic scatter which was designated Site 7NC-J-214 (the Osborne Wetland No. 5 Site).

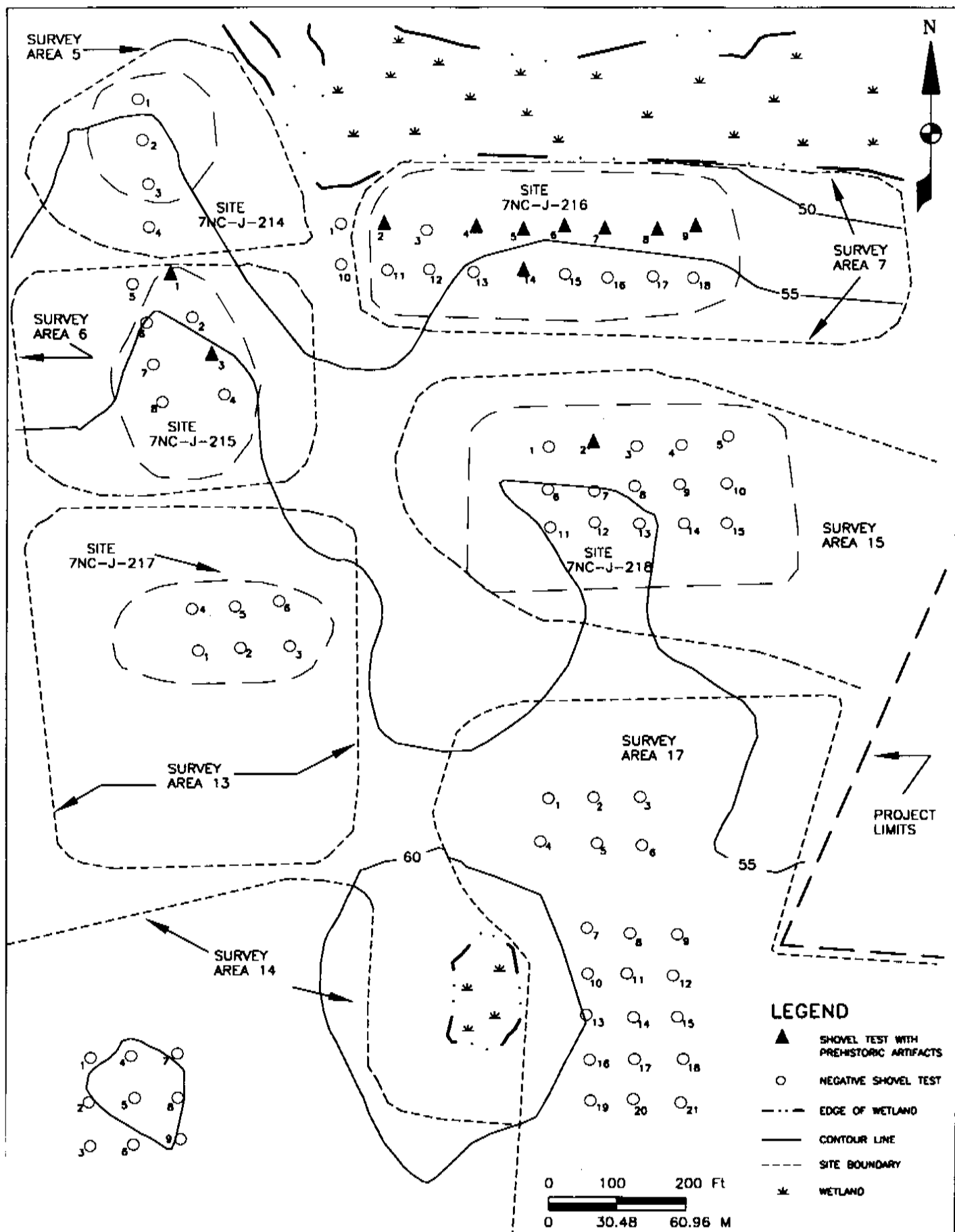


FIGURE 56: Osborne Wetland, Survey Areas 5, 6, 7, 8, 13, 14, and 17, and Sites 7NC-J-214, 215, 216, 217, and 218

Site 7NC-J-214, the Osborne Wetland No. 5 Site

Site 7NC-J-214 (the Osborne Wetland No. 5 Site) was a prehistoric procurement site that occupied all of Survey Area 5. A chert projectile point resembling the Bare Island type (Ritchie 1971) and 12 flakes were recovered from the surface in an area measuring approximately 55x45 meters (180x150 feet), yielding a surface artifact density of 5.2 per 1,000 square meters. A single transect of four shovel test pits was excavated in the survey area, but none yielded artifacts.

Because of the moderate artifact density on the site and the absence of artifacts from the shovel tests, Site 7NC-J-214 did not appear to be potentially eligible for listing in the NRHP in and of itself, because it appeared to carry slight information potential by itself. However, the overall pattern of sites in the Osborne Wetland Replacement Area had the potential to provide data that would yield important insights into aspects of local and regional settlement patterns in prehistoric times. Therefore, in consultation with DelDOT and DESHPO staff, a strategy for Phase II investigations was developed that called for the testing of a sample of the smaller sites in the Osborne Wetland Replacement Area. Site 7NC-J-214 had the fourth highest artifact density of the sites surveyed in the Phase I investigations of the Osborne Wetland Replacement Area. Therefore, it was chosen for testing as part of this sample. Phase II testing was conducted at Site 7NC-J-214, and the results of this testing are presented in Chapter VI.

8. Survey Area 6

Survey Area 6 was located just to the south of Survey Area 5 on the same small rise, which is part of a long ridge that runs south from the stream all the way across the wetland area to the woods (see Figure 56). (Survey Areas 5, 6, and 13 are all located on the same ridge, separated from each other by shallow depressions in the landform.) Survey Area 6 was approximately 70 meters (250 feet) south of the stream and measured about 3.5 hectares (8.6 acres). When the fieldwork was conducted, the area was planted in young corn, approximately one foot tall. Surface visibility was adequate, and the survey was carried out by surface inspection. One site was discovered in this survey area, a low-density prehistoric lithic scatter, which was designated Site 7NC-J-215 (the Osborne Wetland No. 6 Site).

Site 7NC-J-215, the Osborne Wetland No. 6 Site

Site 7NC-J-215 (the Osborne Wetland No. 6 Site) was a prehistoric procurement site occupying all of the rise that comprised Survey Area 6. Thirty-three lithic flakes and a chert biface were recovered from the surface in an area measuring approximately 100 meters north-south by 60 meters east-west (325x200 feet), yielding a surface artifact density of 5.5 per 1,000 square meters. Two transects of four shovel test pits were excavated across the site at 20-meter intervals, and single flakes were recovered from two of these shovel tests. These artifacts were all from the plowzone. None of the artifacts were diagnostic.

The artifact density at this site was, at best, moderate, and all artifacts were recovered from the plowzone. As a result, Site 7NC-J-215 was not considered to be potentially eligible for listing in the NRHP. No further work was recommended.

9. Survey Area 7

Survey Area 7 was located on a broad, gently sloping hill just south of the stream (see Figure 56). The survey area measured about 2.8 hectares (7.0 acres). When the fieldwork was carried out the area was planted in young corn, approximately one foot tall. Surface visibility was adequate, so the survey was carried out by surface inspection. One site was discovered in the survey area, a prehistoric lithic scatter which was designated Site 7NC-J-216 (the Osborne Wetland No. 7 Site).

Site 7NC-J-216, the Osborne Wetland No. 7 Site

Site 7NC-J-216 (the Osborne Wetland No. 7 Site) was a substantial prehistoric lithic scatter coterminous with Survey Area 7. A total of 174 prehistoric artifacts were recovered from the site (Table 7), which measures approximately 170 meters east-west by 70 meters north-south (550x225 feet), yielding a surface artifact density of 14.5 per 1,000 square meters, the highest for any site surveyed during Phase I investigations in the Osborne Wetland Replacement Area. These artifacts included four freehand cores, one bipolar core, one chert point tip, one chert point resembling the Morrow Mountain type (Archaic period) (Coe 1964), one quartz point resembling the Halifax type (Woodland I period) (Coe 1964), one jasper contracting-stemmed point, and one jasper untyped point. Two transects of nine shovel test pits each were excavated across the site at 20-meter intervals, and eight of these yielded prehistoric artifacts. All artifacts were recovered in the plowzone. Because of the number and variety of artifacts recovered, the site appeared to represent a base camp used by prehistoric people while exploiting the nearby wetlands.

Because of the high artifact density on the site and the presence of a variety of tools, including diagnostic items, Site 7NC-J-216 was considered to be potentially eligible for listing in the NRHP, and Phase II significance evaluation was recommended. After consultation with DelDOT and DESIPO staff, Phase II testing was carried out, and the results are reported in Chapter VI.

10. Survey Area 8

Survey Area 8 was located on a ridge adjacent to County Road 470, along the western edge of the project area (see Figure 55). This area was considered high potential in the UDCAR model. However, because of its distance from wetlands, it was considered to be low potential in the model used for this survey. The survey area measured about 1.4 hectares (3.5 acres). At the time fieldwork was conducted, the area was planted in young corn, approximately one foot tall. Surface visibility was adequate, so the survey was carried out by surface inspection. No prehistoric artifacts were recovered during the survey. A handful of historic artifacts were recovered, including bottle glass and a sherd of ironstone. These were considered to be related to refuse disposal along the road. No sites were defined in Survey Area 8, and no further work was recommended.

TABLE 7

SUMMARY OF PREHISTORIC LITHIC ASSEMBLAGE
SITE 7NC-J-216

	RAW MATERIAL					
ARTIFACT TYPE	Quartz	Chert	Jasper	Chalcedony	Ironstone	TOTAL
Bifaces						
Projectile Points	1	1	2	.	.	4
Middle-Stage Bifaces	.	1	.	.	.	1
Late-Stage Bifaces	.	.	1	.	.	1
Ind. Biface Fragments	.	1	.	.	.	1
Unifaces						
Utilized Flakes	1	.	.	.	.	1
Cores						
Freehand Cores	4	.	.	.	.	4
Bipolar Cores	.	.	1	.	.	1
Debitage						
Flake Fragments	40	4	14	.	2	60
Block Shatter	25	1	3	.	2	31
Decortication Flakes	1	1	1	.	.	3
Early Reduction Flakes	36	10	9	.	6	61
Biface Reduction Flakes	.	.	1	1	1	3
Fire-Cracked Rock	.	.	.	.	.	3
TOTALS	108	19	32	1	11	174

11. Survey Area 9

Survey Area 9 was located on a ridge adjacent to County Road 470, along the western edge of the project area, 50 meters south of Survey Area 8 (see Figure 55). This area was evaluated as high potential in the UDCAR model. However, because of its distance from wetlands, it was considered to be low potential in the model used for this survey. The survey area measured about 2.5 hectares (6.2 acres). When the fieldwork was conducted, the area was planted in young corn, approximately one foot tall. Surface visibility was adequate, so an initial survey was carried out by surface inspection. However, in order to insure that silting in the furrows was not limiting visibility and skewing survey results, a block of nine shovel test pits were also excavated on the highest ground in the survey area. A single prehistoric artifact was recovered during the surface inspection. None were recovered from the shovel tests. No sites were defined in Survey Area 9, and no further work was recommended.

12. Survey Area 10

Survey Area 10 was located on a ridge adjacent to County Road 470, along the western edge of the project area, just south of and adjacent to Survey Area 9 (see Figure 55). This area, which comprised about 2.6 hectares (6.4 acres), was evaluated as high potential in the UDCAR model. However, because of its distance from wetlands, it was considered to be low potential in the model used for this survey. When the fieldwork was carried out, the area was planted in young corn, approximately 1.5 feet tall. Surface visibility was adequate, so an initial survey was carried out by surface inspection. However, in order to insure that silting in the furrows was not limiting visibility and skewing survey results, a block of nine shovel test pits were excavated on the highest ground in the survey area. Three prehistoric artifacts, all flakes, were recovered during the surface inspection. None were recovered from the shovel tests. No sites were defined in Survey Area 10, and no further work was recommended.

13. Survey Area 11

Survey Area 11 was located on a ridge, a few meters south of Survey Area 10, along the western edge of the project area. A house and yard separated Survey Area 11 from County Road 470. This area, which comprised about 1.6 hectares (4.0 acres), was considered to have moderate potential in the UDCAR model. However, because of its distance from wetlands, it was considered to be low potential in the model used for this survey. When the fieldwork was carried out, the area was planted in young corn, approximately 1.5 feet tall. Surface visibility was adequate, so the survey was carried out by surface inspection. Three prehistoric artifacts, all flakes, were recovered during the surface inspection. No sites were defined in Survey Area 11, and no further work was recommended.

14. Survey Area 12

Survey Area 12 was located in the southern extremity of the project area, on a ridge with wooded wetlands to the east and houses to the west (Figure 57). This area was considered low and moderate potential in the UDCAR model. However, because it was high ground adjacent to wetlands, it was ranked as having high potential in the model used for this survey. The survey area measured about 2.5 hectares (6.1 acres). When the fieldwork was carried out, the area was planted in young corn, approximately 1.5 feet tall. Surface visibility was adequate, so an initial survey was carried out by surface inspection. However, because of concern during the survey that silting in the furrows and the increasing height of the corn might be hiding artifacts, a block of nine shovel test pits were excavated on the highest ground in the survey area. A single prehistoric artifact was recovered during the surface inspection, and none were recovered from the shovel tests. No sites were defined in Survey Area 12, and no further work was recommended.

15. Survey Area 13

Survey Area 13 was located in the center of the project area, just to the south of Survey Area 6 on a low rise that is part of a long, low ridge that runs south from the stream (see Figure 56).

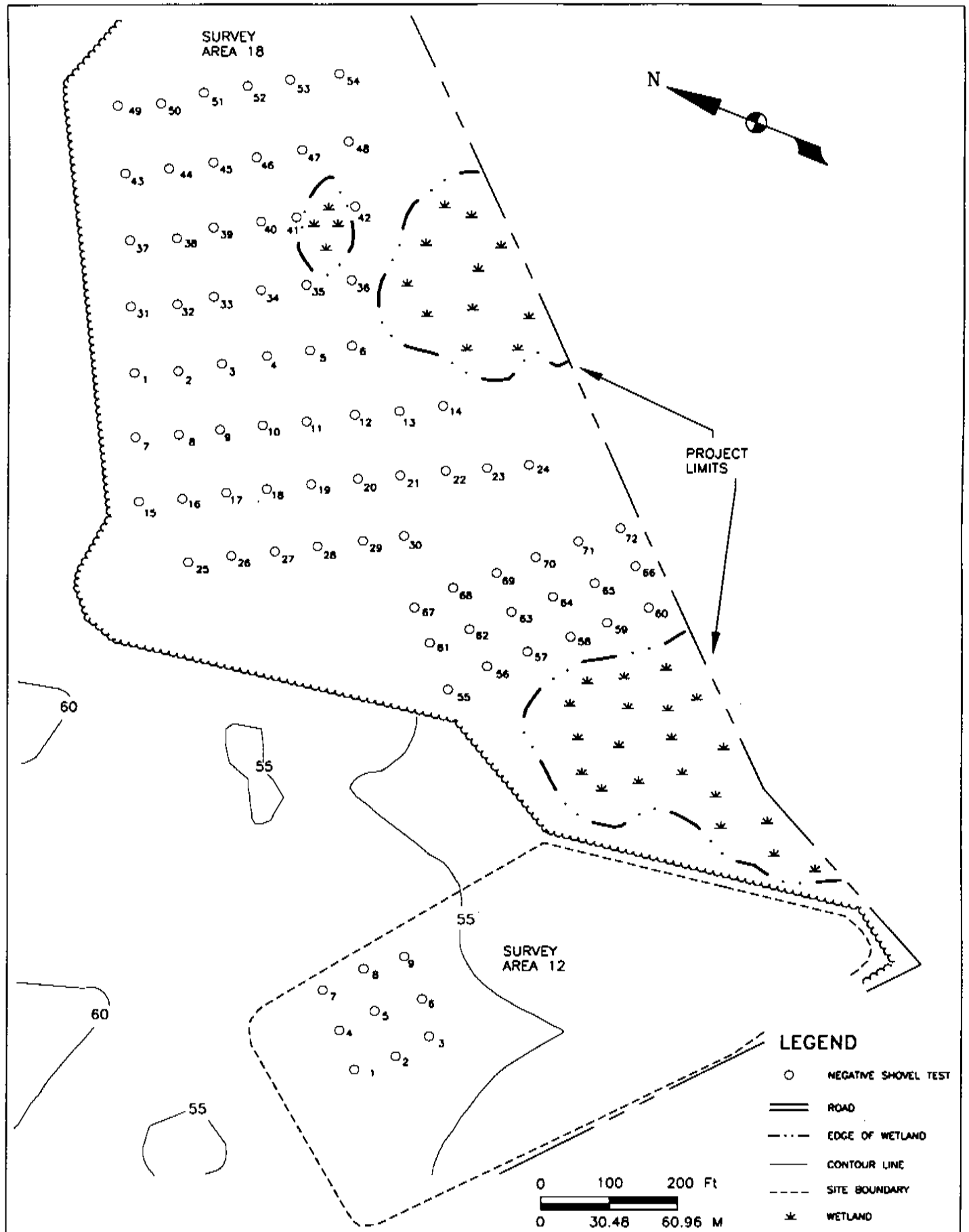


FIGURE 57: Osborne Wetland, Survey Areas 12 and 18

Survey Area 13 was approximately 150 meters from the stream, and 100 meters from a small bay/basin feature. Because of its location between these two wetlands, the area was considered to have high potential for prehistoric sites in the model used for this survey. The survey area comprised about 3.6 hectares (9.0 acres). It was listed as a high-potential area in the UDCAR model as well. When the fieldwork was carried out, the area was planted in young corn, approximately 1.5 feet tall. Surface visibility was adequate, so the survey was carried out by surface inspection. One site was discovered in the survey area, a thin prehistoric lithic scatter which was designated Site 7NC-J-217 (the Osborne Wetland No. 8 Site).

Site 7NC-J-217, the Osborne Wetland No. 8 Site

Site 7NC-J-217 (the Osborne Wetland No. 8 Site) was a prehistoric procurement site occupying the highest part of the hill that comprised Survey Area 13. Thirteen lithic flakes were recovered from the surface in an area measuring approximately 85 meters east-west by 60 meters north-south (280x200 feet), yielding a surface artifact density of 3.6 per 1,000 square meters. Two transects of three shovel test pits were excavated across the site at 20-meter intervals, but no additional artifacts were recovered.

Because of the low artifact density on the site and the absence of artifacts from the shovel tests, Site 7NC-J-217 was thought to have low information potential and was not considered to be potentially eligible for listing in the NRHP. No further work was recommended.

16. Survey Area 14

Survey Area 14 was located in the center of the project area, on a hill just west of and adjacent to the bay/basin feature, and comprised about 3.2 hectares (7.8 acres). This hill constitutes the southern end of the ridge that runs north, through Survey Areas 13, 6, and 5, to the stream (see Figure 56). The woods are immediately to the south. This area was listed as high potential in the UDCAR model. Because it was high ground adjacent to a bay/basin, it was also considered to be high potential in the model used for this survey. At the time the fieldwork was conducted, the area was planted in young corn, approximately 1.5 feet tall. Surface visibility was adequate, so an initial survey was carried out by surface inspection. However, because of concern during the survey that silting in the furrows and the increasing height of the corn might be obscuring artifacts, a block of nine shovel test pits were excavated on the highest ground in the survey area. No artifacts were recovered in Survey Area 14, and no further work was recommended.

17. Survey Area 15

Survey Area 15 was located in the center of the project area, on a hill about 100 meters south of the stream, south of and adjacent to Survey Area 7 and Site 7NC-J-216 (see Figure 56). The survey area measured approximately 2.6 hectares (6.2 acres). Because of its proximity to the stream, the area was considered to have high potential for prehistoric sites in the model used for this survey, as well as in the UDCAR model. At the time the fieldwork was conducted, the area was planted in young corn, approximately one foot tall. Surface visibility was adequate, so the

survey was carried out by surface inspection. One prehistoric site was discovered in the survey area, a low-density prehistoric lithic scatter which was designated Site 7NC-J-218 (the Osborne Wetland No. 9 Site).

Site 7NC-J-218, the Osborne Wetland No. 9 Site

Site 7NC-J-218 (the Osborne Wetland No. 9 Site) was a prehistoric procurement site occupying the crest of the hill that comprised Survey Area 15. Eight lithic flakes, a chert biface, a chert triangular point, and a quartz point resembling the Bare Island type (Ritchie 1971) were recovered from the surface in an area measuring approximately 140 meters east-west by 70 meters north-south (460x230 feet), yielding a surface artifact density of 1.1 per 1,000 square meters. Three transects of five shovel test pits were excavated across the site at 20-meter intervals, and one additional flake was recovered.

Because of the low artifact density on the site, Site 7NC-J-218 was not considered to be potentially eligible for listing in the NRHP, and no further work was recommended.

18. Survey Area 16

Survey Area 16 was located in the southwestern quadrant of the project area, adjacent to the woods on a ridge between Survey Areas 12 and 14. The woods were immediately to the south. This area, which measured about 2.7 hectares (6.7 acres), was considered to be moderate and low potential in the UDCAR model, and was considered to be low potential in the model used for this survey. When the fieldwork was carried out, the area was planted in young corn, approximately 1.5 feet tall. However, because of concern during the survey that silting in the furrows and the increasing height of the corn might be obscuring artifacts, two transects of three shovel test pits each were excavated in the survey area. No prehistoric artifacts were recovered during the surface inspection, and none were found in the shovel tests. No sites were defined in Survey Area 16, and no further work was recommended.

19. Survey Area 17

Survey Area 17 was located in the southeastern corner of the project area on a hill which lies just east of and adjacent to a bay/basin feature. It is also within 150 meters of other wetlands to the southeast. It measured about 1.4 hectares (3.5 acres), and was considered to have high potential for prehistoric sites in the predictive model used for this survey. The area is also mapped as having high potential in the UDCAR model. Survey Area 17 was planted in wheat, and ground visibility was zero. As a result, it was surveyed by shovel testing at 20-meter intervals, employing 21 shovel test pits (see Figure 56). No artifacts were recovered from the shovel tests. No sites were defined in Survey Area 17, and no further work was recommended.

20. Survey Area 18

Survey Area 18 encompassed the woods along the southern boundary of the project area (see Figure 57). Three existing wetlands were mapped in this wooded area, and, therefore, the ridges

between them were considered to have high potential for the presence of prehistoric sites in the model used for this survey. This wooded area was considered to have low and moderate potential in the UDCAR model. A total of 72 shovel test pits were excavated in the survey area, which measured about 8.5 hectares (21 acres), and no artifacts were recovered. The soil did not appear to have been plowed. No sites were defined in Survey Area 18, and no further work was recommended.

21. Surface Collection of Site 7NC-J-5

Because of the excellent surface visibility at the time of the survey, the crew also undertook a surface inspection of a previously recorded site (Site 7NC-J-5), which is located in the SR 1 corridor just east of the eastern border of the Osborne Wetland Replacement Area and just south of and adjacent to Black Diamond Road, on a small hill overlooking the stream. A total of 23 artifacts were recovered, consisting of flakes and pebble cores. In terms of the quantity and types of artifacts recovered in the Phase I survey, this site closely resembles the others in the Osborne Wetland Replacement Area. A cursory surface inspection was also made of the ridge south of the stream, outside the SR 1 right-of-way. Prehistoric artifacts were also noted there, although none were collected. It is apparent from the results of the Phase I survey of the Osborne Wetland Replacement Area that the stream and its associated wetlands are completely surrounded by archaeological sites. Every spot of high ground around these wetlands was used at some time in prehistory.

22. Summary of Osborne Wetland Phase I Investigations

Of the nine separate sites defined in the Osborne Wetland Replacement Area, four were recommended for Phase II significance evaluation, and the results are presented in Chapter VI. These sites all appeared to be associated with a complex of wetlands along one stream, and may be chronologically and functionally related to one another. Two of these sites, 7NC-J-212 and 7NC-J-216, yielded more than 160 artifacts, including various types of tools. These sites were thought to represent base camps, occupied by prehistoric peoples for relatively long periods while they foraged in the many wetlands in the vicinity. The other seven sites yielded few artifacts, so they were thought to lack information potential and were not determined to be potentially significant by themselves. However, the complex of sites in the Osborne Wetland Replacement Area appeared to carry an information potential extending beyond any of the individual sites included in it. Together, these sites held a record of the exploitation of the local wetland resources during a long period of prehistory, from the Archaic period to the Woodland I period. It was thought that information about variable site size and function, changes in subsistence orientation and technology, and changes in settlement patterns and social organization over time in prehistory might be recovered by the investigation of these sites as components of a settlement system. Questions that relate to the basic interpretation of such sites and site systems still need to be studied. For example, comparisons of artifact samples from small and large sites might help to clarify whether the larger sites were, in fact, different in function from the smaller sites or were simply occupied more frequently or over a more extended period. Thus, in order to evaluate the data necessary to reconstruct the full range of human behavior within a localized

ecosystem such as this, it is appropriate that sites of all types, ranging from ephemeral procurement stations to substantial base camps, be adequately sampled.

After consultation with DelDOT and DESHPO staff, it was, therefore, proposed to further test not only Sites 7NC-J-212 and 7NC-J-216, the large sites interpreted as base camps, but also a sample of smaller sites within the perceived settlement cluster. This strategy was in keeping with that proposed by Jay Custer in the initial SR 1 work plan (Custer et al. 1984). The smaller sites chosen for testing were Sites 7NC-J-210 and 7NC-J-214. Site 7NC-J-210 was chosen because it is somewhat removed from the other sites to be tested. In addition, a group of four adjacent positive shovel tests were excavated at this site, suggesting an area of significant artifact density on which to focus the testing. Site 7NC-J-214 was characterized by moderate artifact density, and had already produced one diagnostic artifact. The site was quite small, and its function and/or temporal associations may correlate with its size. Phase II evaluations of all four sites have been conducted, and the results are presented in Chapter VI.

E. PHASE I SUMMARY AND CONCLUSIONS

1. Summary of Survey Results

The current project area included approximately 16 kilometers (10 miles) of highway corridor, several associated wetland replacement areas, and one park and ride facility. The project area, excluding existing U.S. Route 13, measured a total of 286 hectares (707 acres). Of this, 133 hectares (328 acres) were considered to have high potential for either prehistoric or historic archaeological sites. The current survey covered all the high-potential areas, and 45 hectares (112 acres), or 30 percent, of the low-potential area. Thus, a total of 178 hectares (440 acres) were tested, 62 percent of the total project area. The survey involved the excavation of more than 3,000 shovel test pits, most on a 20-meter grid. Table 8 summarizes the survey coverage.

During the Phase I archaeological survey, 35 archaeological sites were identified or re-identified in the project area. The sites are listed in Table 9, and their locations are shown in Figures 58, 59, 60, and 61. Of these 35 sites, 22 are prehistoric sites, eight are historic, and five have both prehistoric and historic components. To date, Phase II evaluations have been conducted on 17 of these sites, and the results of these evaluations are reported in Chapter VI.

The overall site density for the survey was 0.119 sites per hectare, or 11.9 sites per 100 hectares (4.8 sites per 100 acres). Historic site density was 4.2 sites per 100 hectares, and prehistoric site density was 9.1 sites per 100 hectares. Of the 35 sites discovered during the surveys reported here, all but one were located in high-potential survey areas. The one exception, Site 7NC-G-142 (the Marl Pit Road Site) was a circa-1900 rural domestic site. The site density in the high-potential portions of the corridor was thus 25 sites per 100 hectares (10 sites per 100 acres), 8.9 per 100 hectares for historic sites and 20 per 100 hectares for prehistoric sites. More meaningful numbers for prehistoric site density can be generated by using only the areas considered high potential for prehistoric sites, since several areas were designated high potential for historic sites only. Excluding the 37 hectares included in the high-potential area because of purely historic